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EXAMINER	
RILEY, MARCUS T	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,213	OKUYAMA, KENJI	
	Examiner	Art Unit	
	MARCUS T. RILEY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _09 October 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-28_ is/are pending in the application.

4a) Of the above claim(s) _1-20_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _21-28_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _12 March 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _04/28/2004; 09/25/2008_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 10, 2008 has been entered.

Response to Amendment

2. This office action is responsive to applicant's remarks received on October 09, 2008. Claims 1-20 have been cancelled and newly added claims 21-28 are pending.

Response to Arguments

3. Applicant's arguments with respect to amended claim 1, filed on October 09, 2008 have been fully considered but they are not persuasive.

A: Applicant's Remarks

For Applicant's remarks see *"Applicant Arguments/Remarks Made in an Amendment"* filed October 09, 2008.

A: Examiner's Response

Shima either alone or in combination with Brown and Emoto teach, disclose or suggest the applicant's claimed invention. In regards to claim 1, Shima '498 at column 12, lines 46-67 and column 13, lines 1-17, discloses resuming the writing in the receiving buffer when the free space in the receiving buffer has reached a predetermined value. See Rejection below. Examiner relies on figure 11 and in particular lines 6-17 of column 13 (*"If the **storage means is about to reach the storage limit,** the storage management task 81 informs, for example, the print management task 74 of the fact, as described above. The job language interpretation task 72 starts processing at reception of the data at step T4 and interprets the job language of the data at step T5. **If print specifications of reverse-order print, multiple-copy print, etc., are described in the portion written the job language,** the job language interpretation task 72 **sends the specification command to the print management task 74 at step T6. The print management task 74 recognizes the print specification at step T8 and transmits at step T9.**"*).

As a result, Shima does teach either alone or in combination with Brown and Emoto teach, disclose or suggest the shifting from the receiving buffer to the auxiliary buffer and then back to the receiving buffer during the process of receiving data.

Thus, claims are not patentable over the cited references taken alone or in combination.

Accordingly, it is respectfully submitted that the application is not in condition for allowance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Shima et al. (US 6,104,498 hereinafter, Shima '498) and Brown et al. (US 6,046,817 hereinafter, Brown '817) as applied to claim 1 above, and further in view of Emoto (US 6,788,430 hereinafter, Emoto '430).

Regarding claim 21; Shima '498 discloses a print data processing apparatus comprising: (See Figure 1 where FIG. 1 shows an image information print system applied to the invention (*"This invention relates to an **image information print system such as a printer** and an image information print method **for processing print information input to the print system and printing on storage media**"* column 1, lines 14-17);

an auxiliary storage device which can store the print data (See Figure 3, Item 45 for the auxiliary storage and FIG. 3 is a block diagram of a controller of the image information print system applied to the invention *"For example, if **print processing is delayed and data remains in the RAM 44 on a whole, some data is stored in the auxiliary storage** 45 and then read into the RAM 44 as required, whereby both of the RAM 44 **and the auxiliary storage 45** are used efficiently."* column 12, lines 63-67).

a write controller for controlling write processing to write the print data stored in the receiving buffer into the auxiliary storage device (*"**Control is transferred… The reception buffer 83** is formed in a RAM 44 and an **auxiliary storage 45** such as a hard disk drive. A storage management task 81 determines which of the RAM 44 and the **auxiliary storage 45** the data is to be stored in. **It determines which of the RAM 44** and the **auxiliary storage 45 the data is to be saved in so that the data can be saved** and consumed most efficiently by considering the difference between the **read time and the write time caused by the difference between the RAM 44 and the auxiliary storage 45,** the **print information** transfer rate from the host, the **print information processing (print information** analysis to print execution) speed at **the printer,** and any other factors,"* column 12, lines 50-62);

and wherein the write controller staring the write processing to write the print data stored in the receiving buffer into the auxiliary storage device when the free space in the receiving buffer has run out and stopping the write processing when the free space in the receiving buffer is above a predetermined value by the print data being read from the receiving buffer before

completion of the write processing (*"When data is transmitted from the host 1, first the reception task 71 starts processing upon reception of the data at step T1, performs data reception processing at step T2, and stores the received data in the reception buffer 83, then transmits data at step T3.* ***Control is transferred to another task.*** *The reception buffer 83 is formed in a RAM 44 and an* ***auxiliary storage 45 such as a hard disk drive.*** *A storage management task 81* ***determines which of the RAM 44 and the auxiliary storage 45 the data is to be stored in. It determines which of the RAM 44 and the auxiliary storage 45 the data is to be saved in so that the data can be saved and consumed most efficiently by considering the difference between the read time and the write time caused by the difference between the RAM 44 and the auxiliary storage 45,*** *the print information transfer rate from the host, the print information processing (print information analysis to print execution) speed at the printer, and any other factors, as described above. For example, if print processing is delayed and data remains in the RAM 44 on a whole,* ***some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,*** *whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently.* ***Information concerning the storage locations of the data is written into a management table 82.*** *The information in the management table 82 is transferred to the next task using the data. The storage management task 81 also manages the storage limit of the storage means as described above.* ***If the storage means is about to reach the storage limit, the storage management task 81 informs, for example, the print management task 74 of the fact,*** *as described above. The job language interpretation task 72 starts processing at reception of the data at step T4 and interprets the job language of the data at step T5.* ***If print specifications of reverse-order print, multiple-copy print, etc., are described in the portion written the job language,*** *the job language interpretation task 72* ***sends the specification command to the print management task 74 at step T6. The print management task 74 recognizes the print specification at step T8 and transmits at step T9."*** column 12, lines 46-67 thru column 13, lines 1-7);

when the write processing is completed, emptying the space of the receiving buffer where the print data written into the auxiliary storage device in this write processing has been stored (*"This is also applied when the trigger for conversion of the intermediate print information into* ***a bit image is set as the storage capacity limit of the storage means.*** *That is, if the intermediate print information is converted into a bit image and the bit image is sent to the engine,* ***an empty area of the storage means occurs...*** *"* column 11, lines 40-51).

Shima '498 does not expressly disclose a receiver for receiving print data; a receiving buffer for temporarily storing the print data received by the receiver; a receiving controller for temporarily stopping receiving processing of the print data performed by the receiver; wherein

the receiving controller temporarily stopping the receiving processing of the print data when the free space in the receiving buffer has run out and resuming the receiving processing of the print data performed by the receiver by canceling the temporary stopping processing when the free space in the receiving buffer is above the predetermined value in a condition that the receiving processing of the print data is being temporarily stopped.

Brown '817 discloses a receiver for receiving print data (*"The invention is specifically disclosed* ***as a printer which dynamically allocates a set of transmit and receive buffers for use in receiving data*** *over a communications link."* column 1, lines 14-17);

a receiving buffer for temporarily storing the print data received by the receiver (***"Port B at 320 receives data*** *and further communicates such data along a signal line 450 into "N2"* ***receive buffers that are part of the input buffer 422. These receive buffers*** *are designated by the reference numerals 451-455. Also residing in the input buffer 422 are "M2" transmit buffers 461-465,* ***which temporarily store messages to be sent by the printer*** *along a signal line 460 through Port B."* column 17, lines 1-7);

a receiving controller for temporarily stopping receiving processing of the print data performed by the receiver (*"It is preferred that the* ***input buffer 22 be allocated a certain percentage of the printer's overall RAM, and then the control system*** *described herein below will* ***determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports.*** *Upon initialization of the printer, the pool of RAM that is allocated for the communications ports will be a relatively large quantity, however,* ***each individual port will only be allocated a fairly small portion of that pool area of RAM.*** *Essentially, it is preferred that each port upon initialization only be given a minimal buffer configuration that just* ***sufficient to receive the first packet of print job information as it arrives at that port."*** column 15, lines 7-25).

wherein the receiving controller temporarily stopping the receiving processing of the print data when the free space in the receiving buffer has run out and resuming the receiving processing of the print data performed by the receiver by canceling the temporary stopping

processing when the free space in the receiving buffer is above the predetermined value in a condition that the receiving processing of the print data is being temporarily stopped (*"The second communications buffer system is* ***primarily designed to efficiently assign memory space for buffers*** *used by the several communications ports from a* ***predetermined amount of memory space*** *(as a "pool" of memory) that has been* ***allocated for external communications functions by the printer 10.*** *It is preferred that the input buffer 22 be allocated a certain percentage of the printer's overall RAM, and then the* ***control system described hereinbelow will determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports.*** *Upon initialization of the printer, the pool of RAM that is allocated for the communications ports* ***will be a relatively large quantity, however, each individual port will only be allocated a fairly small portion of that pool area of RAM.*** *Essentially, it is preferred that* ***each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job information as it arrives at that port.*** *When that occurs, the* ***port then requests more memory from the pool area of RAM while the port is active.****"* column 15, lines 7-25).

Shima '498 and Brown '817 are combinable because they are from same field of endeavor of printer systems (*"The present invention relates generally to communications equipment and is particularly directed to a printer of the type which contains multiple communications ports ... "* Brown '817 at column 1, lines 12-14).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer systems as taught by Shima '498 by adding a receiver for receiving print data; a receiving buffer for temporarily storing the print data received by the receiver; a receiving controller for temporarily stopping receiving processing of the print data performed by the receiver; wherein the receiving controller temporarily stopping the receiving processing of the print data when the free space in the receiving buffer has run out and resuming the receiving processing of the print data performed by the receiver by canceling the temporary stopping processing when the free space in the receiving buffer is above the predetermined value in a condition that the receiving processing of the print data is being temporarily stopped as taught by Brown '817. The motivation for doing so would have been because it advantageous to efficiently

store print job data that is being received by the printer (*"...to efficiently store print job data that is being received by the printer..."* Brown '817 at column 3, lines 65-66). Therefore, it would have been obvious to combine Shima '498 with Brown '817 to obtain the invention as specified in claim 1.

Shima '498 as modified does not expressly disclose the write controller destroying the print data written into the auxiliary storage device in write processing at this time from the auxiliary storage device.

Emoto '430 discloses the write controller destroying the print data written into the auxiliary storage device in write processing at this time from the auxiliary storage device (*"...the print request managing task generates* ***the print data and the storage data for each page, and the print execution task executes printing*** *and transmits the print end report for each page, and* ***sequentially delete data from the storage data stored in the auxiliary storage device by page to page*** *when printing of such page of the final copy is finished,* ***the occupied region in the auxiliary storage device can be released earlier."*** column 5, lines 41-46).

Shima '498 and Emoto '430 are combinable because they are from same field of endeavor of printer systems (*"This invention relates to a printer, printer control method..."* Emoto '430 at column 1, line 9).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer systems as taught by Shima '498 by adding wherein when the write processing is cancelled, the write controller destroys the print data in the auxiliary storage device as taught by Emoto '430. The motivation for doing so would have been because it advantageous to provide a printer which requires a time as short as possible until completing a printing job either upon one-copy printing or upon collate printing (*"...to provide a printer which requires a time as short as possible until completing a printing job either upon one-copy printing or upon collate printing."* Emoto '430 at column 2,

lines 17-20). Therefore, it would have been obvious to combine Shima '498 with Emoto '430 to obtain the invention as specified in claim 1.

Regarding claim 22; Shima '498 as modified does not expressly disclose a wherein the receiving controller switches receiving processing of the print data to a fast receiving mode; a slow receiving mode in which the receiving processing is slower than in the fast receiving mode; and a suspend mode which suspends the receiving processing; and wherein when an amount of print data stored in the receiving buffer is below a first threshold value, the receiving controller sets the receiving processing into the fast receiving mode; and when the amount of print data stored in the receiving buffer has exceeded a second threshold value, the receiving controller sets the receiving processing into the slow receiving mode; and when the free space in the receiving buffer has run out, the receiving controller sets the receiving processing into the suspend mode; and when, in a condition of the suspend mode, the free space in the receiving buffer is below a third threshold value in which free space of a predetermined amount is generated in the receiving buffer, the receiving controller resumes the receiving processing of the print data by canceling the suspend mode.

Brown '817 discloses a wherein the receiving controller switches receiving processing of the print data to a fast receiving mode (*"Essentially,* ***it is preferred that each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job*** *information as it arrives at that port. When that occurs, the port then requests more memory from the pool area of RAM while the port is active.* ***The nominal size of the initialized minimal buffer configuration for the various ports of printer 10 depends upon*** *the overall characteristics of the printer, including such parameters* ***as its processing speed, print engine speed, size of its overall RAM system,*** *memory size allocated for the total pool area, type and communications data rate of its ports and data links, and the like. It is preferred to keep the overall combined size of the initialized minimal buffer configuration for the various ports at a minimum, so as to* ***provide***

the maximum flexibility in available RAM to be re-allocated during dynamic operations as the ports become active when receiving print jobs " column 14, lines 63-67 thru column 15, lines 1-25).

a slow receiving mode in which the receiving processing is slower than in the fast receiving mode (" *It is preferred to* ***keep the overall combined size of the initialized minimal buffer configuration for the various ports at a minimum,*** *so as to provide the maximum flexibility in available RAM to* ***be re-allocated during dynamic operations as the ports become active when receiving print jobs,*** *or when receiving and responding to various commands or inquiries from, e.g., host computers and network supervisors. Therefore, the* ***combined size of the minimal buffer configuration should be at a relatively small percentage of the total size of the pool area, and could run as low as 1% (or lower)*** *of the pool area size, and would most likely be less than 50% of the pool area size.*" column 14, lines 63-67 thru column 15, lines 1-25).

and a suspend mode which suspends the receiving processing (***"It is preferred that the input buffer 22 be allocated a certain percentage of the printer's overall RAM,*** *and then the control system described hereinbelow will* ***determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports.*** *Upon initialization of the printer, the pool of RAM that is allocated for the communications ports will be a relatively large quantity, however, each individual port will only be allocated a fairly small portion of that pool area of RAM. Essentially, it is preferred that* ***each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job information as it arrives at that port.*** *When that occurs, the port then requests more memory from the pool area of RAM while the port is active.* " column 14, lines 63-67 thru column 15, lines 1-25).

and wherein when an amount of print data stored in the receiving buffer is below a first threshold value, the receiving controller sets the receiving processing into the fast receiving mode (*"Essentially,* ***it is preferred that each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job*** *information as it arrives at that port. When that occurs, the port then requests more memory from the pool area of RAM while the port is active.* ***The nominal size of the initialized minimal buffer configuration for the various ports of printer 10 depends upon*** *the overall characteristics of the printer, including such parameters* ***as its processing speed, print engine speed, size of its overall RAM system,*** *memory size allocated for the total pool area, type and communications data rate of its ports and data links, and the like. It is preferred to keep the overall combined size of the initialized minimal buffer configuration for the various ports at a minimum, so as to* ***provide the maximum flexibility in available RAM to be re-allocated during dynamic operations as the ports become active when receiving print jobs*** " column 14, lines 63-67 thru column 15, lines 1-25).

and when the amount of print data stored in the receiving buffer has exceeded a second threshold value, the receiving controller sets the receiving processing into the slow receiving mode (*" It is preferred to* ***keep the overall combined size of the initialized minimal buffer configuration for the various ports at a minimum,*** *so as to provide the maximum flexibility in available RAM to* ***be re-allocated during dynamic operations as the ports become active when receiving print jobs,*** *or when receiving and responding to various commands or inquiries from, e.g., host computers and network supervisors. Therefore, the* ***combined size of the minimal buffer configuration should be at a relatively small percentage of the total size of the pool area, and could run as low as 1% (or lower)*** *of the pool area size, and would most likely be less than 50% of the pool area size."* column 14, lines 63-67 thru column 15, lines 1-25).

and when the free space in the receiving buffer has run out, the receiving controller sets the receiving processing into the suspend mode (*"****It is preferred that the input buffer 22 be allocated a certain percentage of the printer's overall RAM,*** *and then the control system described hereinbelow will* ***determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports.*** *Upon initialization of the printer, the pool of RAM that is allocated for the communications ports will be a relatively large quantity, however, each individual port will only be allocated a fairly small portion of that pool area of RAM. Essentially, it is preferred that* ***each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job information as it arrives at that port.*** *When that occurs, the port then requests more memory from the pool area of RAM while the port is active. "* column 14, lines 63-67 thru column 15, lines 1-25).

and when, in a condition of the suspend mode, the free space in the receiving buffer is below a third threshold value in which free space of a predetermined amount is generated in the receiving buffer, the receiving controller resumes the receiving processing of the print data by canceling the suspend mode (*"It is preferred that the input buffer 22 be* ***allocated a certain percentage of the printer's overall RAM, and then the control system described hereinbelow will determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports. Upon initialization of the printer, the pool of RAM that is allocated for the communications ports will be a relatively large quantity, however, each individual port will only be allocated a fairly small portion of that pool area of RAM.*** *Essentially, it is preferred that each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job information as it arrives at that port.* ***When that occurs, the port then requests more memory from the pool area of RAM while the port is active.*** *The nominal size of the*

initialized minimal buffer configuration for the various ports of printer 10 depends upon the overall characteristics of the printer, including such parameters as its processing speed, print engine speed, size of its overall RAM system, memory size allocated for the total pool area, type and communications data rate of its ports and data links, and the like. ***It is preferred to keep the overall combined size of the initialized minimal buffer configuration for the various ports at a minimum, so as to provide the maximum flexibility in available RAM to be re-allocated during dynamic operations as the ports become active when receiving print jobs****, or when receiving and responding to various commands or inquiries from, e.g., host computers and network supervisors.* ***Therefore, the combined size of the minimal buffer configuration should be at a relatively small percentage of the total size of the pool area, and could run as low as 1% (or lower) of the pool area size, and would most likely be less than 50% of the pool area size".*** column 14, lines 63-67 thru column 15, lines 1-25).

Shima '498 and Brown '817 are combinable because they are from same field of endeavor of printer systems (*"The present invention relates generally to communications equipment and is particularly directed to a printer of the type which contains multiple communications ports…"* Brown '817 at column 1, lines 12-14).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer systems as taught by Shima '498 by adding a wherein the receiving controller switches receiving processing of the print data to a fast receiving mode; a slow receiving mode in which the receiving processing is slower than in the fast receiving mode; and a suspend mode which suspends the receiving processing; and wherein when an amount of print data stored in the receiving buffer is below a first threshold value, the receiving controller sets the receiving processing into the fast receiving mode; and when the amount of print data stored in the receiving buffer has exceeded a second threshold value, the receiving controller sets the receiving processing into the slow receiving mode; and when the free space in the receiving buffer has run out, the receiving controller sets the receiving processing into the suspend mode; and when, in a condition of the suspend mode, the free space in the receiving buffer is below a third threshold value in which free space of a predetermined amount is generated in the receiving buffer, the receiving controller resumes the receiving processing of the print data by canceling

the suspend mode as taught by Brown '817. The motivation for doing so would have been because it advantageous to efficiently store print job data that is being received by the printer (*"...to efficiently store print job data that is being received by the printer..."* Brown '817 at column 3, lines 65-66). Therefore, it would have been obvious to combine Shima '498 with Brown '817 to obtain the invention as specified in claim 1.

Regarding claim 23; Shima '498 discloses a print data processing apparatus according to claim 22, wherein the write controller starts write processing to write the print data stored in the receiving buffer into the auxiliary storage device when a free space in the receiving buffer has run out (*"When data is transmitted from the host 1, first the reception task 71 starts processing upon reception of the data at step T1, performs data reception processing at step T2, and stores the received data in the reception buffer 83, then transmits data at step T3.* ***Control is transferred to another task.*** *The reception buffer 83 is formed in a RAM 44 and an* ***auxiliary storage 45 such as a hard disk drive.*** *A storage management task 81* ***determines which of the RAM 44 and the auxiliary storage 45 the data is to be stored in.*** *It* ***determines which of the RAM 44 and the auxiliary storage 45 the data is to be saved in so that the data can be saved and consumed most efficiently by considering the difference between the read time and the write time caused by the difference between the RAM 44 and the auxiliary storage 45,*** *the print information transfer rate from the host, the print information processing (print information analysis to print execution) speed at the printer, and any other factors, as described above. For example, if print processing is delayed and data remains in the RAM 44 on a whole,* ***some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,*** *whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently.* ***Information concerning the storage locations of the data is written into a management table 82.*** *The information in the management table 82 is transferred to the next task using the data. The storage management task 81 also manages the storage limit of the storage means as described above.* ***If the storage means is about to reach the storage limit, the storage management task 81 informs, for example, the print management task 74 of the fact,*** *as described above."* column 12, lines 46-67 thru column 13, lines 1-8);

and stops the write processing, when an amount of print data stored in the receiving buffer is below the third threshold value by the print data being read from the receiving buffer before completion of the write processing (*"When data is transmitted from the host 1, first the reception task 71*

starts processing upon reception of the data at step T1, performs data reception processing at step T2, and stores the received data in the reception buffer 83, then transmits data at step T3. ***Control is transferred to another task.*** *The reception buffer 83 is formed in a RAM 44 and an* ***auxiliary storage 45 such as a hard disk drive.*** *A storage management task 81* ***determines which of the RAM 44 and the auxiliary storage 45 the data is to be stored in. It determines which of the RAM 44 and the auxiliary storage 45 the data is to be saved in so that the data can be saved and consumed most efficiently by considering the difference between the read time and the write time caused by the difference between the RAM 44 and the auxiliary storage 45,*** *the print information transfer rate from the host, the print information processing (print information analysis to print execution) speed at the printer, and any other factors, as described above. For example, if print processing is delayed and data remains in the RAM 44 on a whole,* ***some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required****, whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently.* ***Information concerning the storage locations of the data is written into a management table 82.*** *The information in the management table 82 is transferred to the next task using the data. The storage management task 81 also manages the storage limit of the storage means as described above.* ***If the storage means is about to reach the storage limit, the storage management task 81 informs, for example, the print management task 74 of the fact****, as described above."* column 12, lines 46-67 thru column 13, lines 1-8);

and, when the write processing is completed, empties the space of the receiving buffer where the print data written into the auxiliary storage device in this write processing has been stored (*"This is also applied when the trigger for conversion of the intermediate print information into* ***a bit image is set as the storage capacity limit of the storage means.*** *That is, if the intermediate print information is converted into a bit image and the bit image is sent to the engine,* ***an empty area of the storage means occurs****..."* column 11, lines 40-51).

Shima '498 as modified does not expressly disclose the write controller destroying the print data written into the auxiliary storage device in write processing at this time from the auxiliary storage device.

Emoto '430 discloses the write controller destroying the print data written into the auxiliary storage device in write processing at this time from the auxiliary storage device (*"...the print request managing task generates* ***the print data and the storage data for each page, and the print execution task executes printing*** *and transmits the print end report for each page, and* ***sequentially delete data from the storage data stored in the***

***auxiliary storage device by page to page** when printing of such page of the final copy is finished, **the occupied region in the auxiliary storage device can be released earlier.**"* column 5, lines 41-46).

Shima '498 and Emoto '430 are combinable because they are from same field of endeavor of printer systems (*"This invention relates to a printer, printer control method..."* Emoto '430 at column 1, line 9).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer systems as taught by Shima '498 by adding wherein when the write processing is cancelled, the write controller destroys the print data in the auxiliary storage device as taught by Emoto '430. The motivation for doing so would have been because it advantageous to provide a printer which requires a time as short as possible until completing a printing job either upon one-copy printing or upon collate printing (*"...to provide a printer which requires a time as short as possible until completing a printing job either upon one-copy printing or upon collate printing."* Emoto '430 at column 2, lines 17-20). Therefore, it would have been obvious to combine Shima '498 with Emoto '430 to obtain the invention as specified in claim 1.

Regarding claim 24; Shima '498 discloses a print data processing apparatus according to claim 21, further comprising a developing unit for reading the print data from the receiving buffer or the auxiliary storage device to develop the print data into image data (*"...and if conversion **processing of intermediate print information into bit image data** may be performed in **a print information reception order in** response to the paper discharge face information, **converts the intermediate print information into bit image data in desired units** without waiting for a cluster of intermediate print information to be stored in the storage means, or if the intermediate print information is **converted into bit image data** in an order reverse to the print information reception order, waits for a cluster of intermediate print information to be stored in the storage means **before starting conversion of intermediate print information into bit image data.**"* column 4, lines 38-49);

wherein, when the print data which has finished with the write processing is present in the auxiliary storage device (*"For example, **if print processing is delayed and data** remains in the RAM 44 on a whole, some data is stored **in the auxiliary storage 45** and then read into the RAM 44 as required, whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently."* column 12, lines 63-67).

the developing unit reads the print data in order of writing from the auxiliary storage device to develop the print data into image data (*"For example, if print processing is delayed and data remains in the RAM 44 on a whole, **some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,** whereby **both of the RAM 44 and the auxiliary storage 45 are used efficiently.**"* column 12, lines 63-67).

and wherein, when the print data which has finished with the write processing is not present in the auxiliary storage device, the developing unit reads the print data from the receiving buffer to develop the print data into the image data (*"For example, if print processing is delayed and data remains in the RAM 44 on a whole, **some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,** whereby **both of the RAM 44 and the auxiliary storage 45 are used efficiently.**"* column 12, lines 63-67).

Regarding claim 25; Shima '498 discloses print data processing apparatus according to claim 22, further comprising a developing unit for reading the print data from the receiving buffer or the auxiliary storage device to develop the print data into image data (*"...and if conversion **processing of intermediate print information into bit image data** may be performed in **a print information reception order in** response to the paper discharge face information, **converts the intermediate print information into bit image data in desired units** without waiting for a cluster of intermediate print information to be stored in the storage means, or if the intermediate print information is **converted into bit image data** in an order reverse to the print information reception order, waits for a cluster of intermediate print information to be stored in the storage means **before starting conversion of intermediate print information into bit image data.**"* column 4, lines 38-49);

wherein, when the print data which has finished with the write processing is present in the auxiliary storage device (*"For example, if print processing is delayed and data remains in the RAM 44 on a whole,*

some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required, *whereby* ***both of the RAM 44 and the auxiliary storage 45 are used efficiently."*** column 12, lines 63-67).

the developing unit reads the print data in order of writing from the auxiliary storage device to develop the print data into image data (*"For example, if print processing is delayed and data remains in the RAM 44 on a whole,* ***some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,*** *whereby* ***both of the RAM 44 and the auxiliary storage 45 are used efficiently."*** column 12, lines 63-67);

and wherein, when the print data which has finished with the write processing is not present in the auxiliary storage device, the developing unit reads the print data from the receiving buffer to develop the print data into the image data (*"For example, if print processing is delayed and data remains in the RAM 44 on a whole,* ***some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,*** *whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently."* column 12, lines 63-67)."

Regarding claim 26; Shima '498 discloses a print data processing apparatus according to claim 23, further comprising a developing unit for reading the print data from the receiving buffer or the auxiliary storage device to develop the print data into image data, wherein, when the print data which has finished with the write processing is present in the auxiliary storage device, the developing unit reads the print data in order of writing from the auxiliary storage device to develop the print data into image data (*"...and if conversion* ***processing of intermediate print information into bit image data may be performed in a print information reception order in response to the paper discharge face information, converts the intermediate print information into bit image data in desired units without waiting for a cluster of intermediate print information to be stored in the storage means,*** *or if the intermediate print information is converted into bit image data in an order reverse to the print information reception order, waits for a cluster of intermediate print information to be stored in the storage means before starting conversion of intermediate print information into bit image data."* column 4, lines 38-49);

and wherein, when the print data which has finished with the write processing is not present in the auxiliary storage device, the developing unit reads the print data from the receiving buffer to develop the print data into the image data. (*"...and if conversion processing of intermediate print information into bit image data may be performed in a print information reception order in response to the paper discharge face information, converts the intermediate print information into bit image data in desired units without waiting for a cluster of intermediate print information to be stored in the storage means,* ***or if the intermediate print information is converted into bit image data in an order reverse to the print information reception order, waits for a cluster of intermediate print information to be stored in the storage means before starting conversion of intermediate print information into bit image data."*** column 4, lines 38-49).

Regarding claim 27; Shima '498 discloses data processing apparatus comprising: (See Figure 1 where FIG. 1 shows an image information print system applied to the invention (*"This invention relates to an* ***image information print system such as a printer*** *and an image information print method* ***for processing print information input to the print system and printing on storage media"*** column 1, lines 6-9);

an auxiliary storage device which can store the print data (See Figure 3, Item 45 for the auxiliary storage and FIG. 3 is a block diagram of a controller of the image information print system applied to the invention *"For example, if* ***print processing is delayed and data remains in the RAM 44 on a whole, some data is stored in the auxiliary storage*** *45 and then read into the RAM 44 as required, whereby both of the RAM 44* ***and the auxiliary storage 45*** *are used efficiently."* column 12, lines 63-67).

a write controller for controlling write processing to write the print data stored in the receiving buffer into the auxiliary storage device (***"Control is transferred... The reception buffer 83*** *is formed in a RAM 44 and an* ***auxiliary storage 45*** *such as a hard disk drive. A storage management task 81 determines which of the RAM 44 and the* ***auxiliary storage 45*** *the data is to be stored in.* ***It determines which of the RAM 44*** *and the* ***auxiliary storage 45 the data is to be saved in so that the data can be saved*** *and consumed most efficiently by considering the difference between the* ***read time and the write time caused by the difference between the RAM 44 and the auxiliary storage 45,*** *the* ***print information*** *transfer rate from the host, the* ***print information processing (print information*** *analysis to print execution) speed at* ***the printer,*** *and any other factors,"* column 12, lines 50-62);

and wherein the write controller staring the write processing to write the print data stored in the receiving buffer into the auxiliary storage device when the free space in the receiving buffer has run out and stopping the write processing when the free space in the receiving buffer is above a predetermined value by the print data being read from the receiving buffer before completion of the write processing (*"When data is transmitted from the host 1, first the reception task 71 starts processing upon reception of the data at step T1, performs data reception processing at step T2, and stores the received data in the reception buffer 83, then transmits data at step T3.* ***Control is transferred to another task.*** *The reception buffer 83 is formed in a RAM 44 and an* ***auxiliary storage 45 such as a hard disk drive.*** *A storage management task 81* ***determines which of the RAM 44 and the auxiliary storage 45 the data is to be stored in. It determines which of the RAM 44 and the auxiliary storage 45 the data is to be saved in so that the data can be saved and consumed most efficiently by considering the difference between the read time and the write time caused by the difference between the RAM 44 and the auxiliary storage 45,*** *the print information transfer rate from the host, the print information processing (print information analysis to print execution) speed at the printer, and any other factors, as described above. For example, if print processing is delayed and data remains in the RAM 44 on a whole,* ***some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required,*** *whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently.* ***Information concerning the storage locations of the data is written into a management table 82.*** *The information in the management table 82 is transferred to the next task using the data. The storage management task 81 also manages the storage limit of the storage means as described above.* ***If the storage means is about to reach the storage limit, the storage management task 81 informs, for example, the print management task 74 of the fact****, as described above."* column 12, lines 46-67 thru column 13, lines 1-8);

Shima '498 and, when the write processing is completed, emptying the space of the receiving buffer where the print data written into the auxiliary storage device in this write processing has been stored (*"This is also applied when the trigger for conversion of the intermediate print information into* ***a bit image is set as the storage capacity limit of the storage means.*** *That is, if the intermediate print information is converted into a bit image and the bit image is sent to the engine,* ***an empty area of the storage means occurs****..."* column 11, lines 40-51).

Shima '498 does not expressly disclose a receiver for receiving data; a receiving buffer for temporarily storing the data received by the receiver; a receiving controller for temporarily stopping receiving processing of the data performed by the receiver; wherein the receiving controller temporarily stopping the receiving processing of the print data when the free space in the receiving buffer has run out and resuming the receiving processing of the print data performed by the receiver by canceling the temporary stopping processing when the free space in the receiving buffer is above the predetermined value in a condition that the receiving processing of the print data is being temporarily stopped.

Brown '817 discloses a receiver for receiving data (*"The invention is specifically disclosed* ***as a printer which dynamically allocates a set of transmit and receive buffers for use in receiving data*** *over a communications link."* column 1, lines 14-17); receiving buffer for temporarily storing the data received by the receiver (*"****Port B at 320 receives data*** *and further communicates such data along a signal line 450 into "N2"* ***receive buffers that are part of the input buffer 422. These receive buffers*** *are designated by the reference numerals 451-455. Also residing in the input buffer 422 are "M2" transmit buffers 461-465,* ***which temporarily store messages to be sent by the printer*** *along a signal line 460 through Port B."* column 17, lines 1-7); a receiving controller for temporarily stopping receiving processing of the data performed by the receiver (*"It is preferred that the* ***input buffer 22 be allocated a certain percentage of the printer's overall RAM, and then the control system*** *described herein below will* ***determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports.*** *Upon initialization of the printer, the pool of RAM that is allocated for the communications ports will be a relatively large quantity, however,* ***each individual port will only be allocated a fairly small portion of that pool area of RAM.*** *Essentially, it is preferred that each port upon initialization only be given a minimal buffer configuration that just* ***sufficient to receive the first packet of print job information as it arrives at that port."*** column 15, lines 12-25); wherein the receiving controller temporarily stopping the receiving processing of the print data when the free space in the receiving buffer has run out and resuming the receiving processing of the print data performed by the receiver by canceling the temporary

stopping processing when the free space in the receiving buffer is above the predetermined value in a condition that the receiving processing of the print data is being temporarily stopped (*"The second communications buffer system is **primarily designed to efficiently assign memory space for buffers** used by the several communications ports from a **predetermined amount of memory space** (as a "pool" of memory) that has been **allocated for external communications functions by the printer 10.** It is preferred that the input buffer 22 be allocated a certain percentage of the printer's overall RAM, and then the **control system described hereinbelow will determine how much of that allocated RAM shall be provided for the buffers used by each of the individual ports.** Upon initialization of the printer, the pool of RAM that is allocated for the communications ports **will be a relatively large quantity, however, each individual port will only be allocated a fairly small portion of that pool area of RAM.** Essentially, it is preferred that **each port upon initialization only be given a minimal buffer configuration that just sufficient to receive the first packet of print job information as it arrives at that port.** When that occurs, the **port then requests more memory from the pool area of RAM while the port is active.**"* column 15, lines 7-25).

Shima '498 and Brown '817 are combinable because they are from same field of endeavor of printer systems (*"The present invention relates generally to communications equipment and is particularly directed to a printer of the type which contains multiple communications ports ... "* Brown '817 at column 1, lines 12-14).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer systems as taught by Shima '498 by adding a receiver for receiving data; a receiving buffer for temporarily storing the data received by the receiver; a receiving controller for temporarily stopping receiving processing of the data performed by the receiver; wherein the receiving controller temporarily stopping the receiving processing of the print data when the free space in the receiving buffer has run out and resuming the receiving processing of the print data performed by the receiver by canceling the temporary stopping processing when the free space in the receiving buffer is above the predetermined value in a condition that the receiving processing of the print data is being temporarily stopped as taught by Brown '817. The motivation for doing so would have been because it advantageous to efficiently store print job

data that is being received by the printer (*"...to efficiently store print job data that is being received by the printer..."* Brown '817 at column 3, lines 65-66). Therefore, it would have been obvious to combine Shima '498 with Brown '817 to obtain the invention as specified in claim 1.

Shima '498 as modified does not expressly disclose the write controller destroying the print data written into the auxiliary storage device in write processing at this time from the auxiliary storage device.

Emoto '430 discloses the write controller destroying the print data written into the auxiliary storage device in write processing at this time from the auxiliary storage device (*"...the print request managing task generates* ***the print data and the storage data for each page, and the print execution task executes printing*** *and transmits the print end report for each page, and* ***sequentially delete data from the storage data stored in the auxiliary storage device by page to page*** *when printing of such page of the final copy is finished,* ***the occupied region in the auxiliary storage device can be released earlier."*** column 5, lines 41-46).

Shima '498 and Emoto '430 are combinable because they are from same field of endeavor of printer systems (*"This invention relates to a printer, printer control method..."* Emoto '430 at column 1, line 9).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer systems as taught by Shima '498 by adding wherein when the write processing is cancelled, the write controller destroys the print data in the auxiliary storage device as taught by Emoto '430. The motivation for doing so would have been because it advantageous to provide a printer which requires a time as short as possible until completing a printing job either upon one-copy printing or upon collate printing (*"...to provide a printer which requires a time as short as possible until completing a printing job either upon one-copy printing or upon collate printing."* Emoto '430 at column 2,

lines 17-20). Therefore, it would have been obvious to combine Shima '498 with Emoto '430 to obtain the invention as specified in claim 1.

Regarding claim 28; Shima '498 discloses a data processing apparatus according to claim 27, further comprising: a processing unit for sequentially reading the data from the receiving buffer or the auxiliary storage device to conduct a predetermined processing to the data (*"For example, **if print processing is delayed and data** remains in the RAM 44 on a whole, some data is stored in the auxiliary storage 45 and then read into the RAM 44 as required, whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently."* column 12, lines 63-67).

wherein, when the data which has finished with the write processing is present in the auxiliary storage device (*"For example, **if print processing is delayed and data** remains in the RAM 44 on a whole, some data is stored **in the auxiliary storage 45** and then read into the RAM 44 as required, whereby both of the RAM 44 and the auxiliary storage 45 are used efficiently."* column 12, lines 63-67).

the processing unit reads the data in order of writing from the auxiliary storage device to conduct the predetermined processing to the data (*"For example, **if print processing is delayed and data** remains in the RAM 44 on a whole, some data is stored in the auxiliary storage 45 **and then read into the RAM 44 as required**, whereby **both of the RAM 44 and the auxiliary storage 45 are used efficiently.**"* column 12, lines 63-67).

and wherein, when the data which has finished with the write processing is not present in the auxiliary storage device, the processing unit reads the data from the receiving buffer to conduct the predetermined processing to the data (*"For example, **if print processing is delayed and data** remains in the RAM 44 on a whole, some data is stored in the auxiliary storage 45 **and then read into the RAM 44 as required**, whereby **both of the RAM 44 and the auxiliary storage 45 are used efficiently.**"* column 12, lines 63-67).

<u>Examiner Notes</u>

6. The Examiner cites particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully considers the references in its entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or as disclosed by the Examiner.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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